

# **GUIDE TO ADHESIVES**

## **TYPES OF ADHESIVE**

**There are two distinct types of adhesive:**

A. Chlorinated and B. Non-Chlorinated

In broad terms, the content of an aerosol adhesive could be divided into three constituents. The resins and rubbers (the adhesive itself); the solvents which take the adhesive from a solid to a liquid; and the propellant, which carries the mixture out of the aerosol.

In the case of both chlorinated and non-chlorinated products, the adhesive and the propellant are the same - it is only the solvent blend which changes.

### **A. Chlorinated Adhesive**

The solvent in this product is Dichloromethane, sometimes called Methylene Chloride. The main advantage of this solvent is that it is non flammable, and boils (airs off) at a very low temperature - approximately 4°C. This gives the benefit of a fast setting adhesive, even in cold conditions. The disadvantage is that Dichloromethane is regarded as harmful, and requires the appropriate pictogram be printed on the aerosol, and, of course, a certain amount of care should be taken when using it.

**These chlorinated adhesives can be further sub-divided into:**

1. Chlorinated Premium
2. Chlorinated Standard
3. Chlorinated Budget

In all instances the amount of propellant remains constant. Variations are caused by a lower level of solids (rubbers and resins) present in the mixture, or by reducing the most expensive element (rubber), in favour of the less expensive element (resin). This results in a harder, less tacky formulation.

The Premium Grade has approximately 34% solids

The Standard Grade has approximately 28% solids

The Budget Grade has approximately 26% solids.

## B. Non-Chlorinated Adhesive

This is formulated using a variety of different solvents and alcohols, blended together to try to emulate the characteristics of Dichloromethane, but without the need for the harmful cross on the label. Unfortunately, these solvent blends tend to boil at a much higher temperature than Dichloromethane, typically 15°C, which results in a much slower setting adhesive. In some applications this is not an issue (and may even be an advantage), however, in the main this is seen as a disadvantage, particularly at lower temperatures because it leads to a much slower bonding time.

However, it is worth noting that in this day and age of environmental awareness, there is an increase in the number of companies who are specifying the use of non-chlorinated adhesive, particularly on mainland Europe.

### **WHAT IS PLASTICISER MIGRATION?**

PVC and Vinyl flooring manufacturers appear to be under increasing pressure to improve the flexibility of their flooring products.

Flexible PVC or Vinyl is a cured mixture of hard PVC resin, plasticisers, which soften the resin, and other additives. The simple way to increase the flexibility of the product is to add more plasticiser.

The resins and the plasticiser are not chemically bound, but held together as a solid solution by strong electromotive forces. Thus plasticisers are capable of being removed from the surface of the film. The plasticiser is then replaced by materials from the vinyl mass. This is why, after plasticiser migration, the vinyl sometimes changes in appearance.

Plasticiser Migration is the term used to describe the process whereby plasticisers diffuse from the PVC mass to another substance, in this case, the adhesive which has been used to bond it. This then causes the degradation of the adhesive, and delamination of the bond.

It is therefore extremely important that the correct adhesive is used at all times. This can be easily achieved by checking with the flooring material suppliers, who will, if necessary, check with the manufacturers of the PVC or vinyl.. This should be done prior to any work being carried out.

There is not a 'one adhesive bonds all' scenario

We at AFT are working hard on this issue, but in the meantime, it is fundamentally important either to have the material tested for plasticiser content, or to refer to the flooring material supplier for guidance.